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REMARKS

Claims 1-20 are all the claims presently pending in the application. Claims 9, 11-12, and 19-20 are amended to more clearly define the invention. Claims 1, 5, and 18 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicants also note that, notwithstanding any claim amendments herein or later during prosecution, Applicants' intent is to encompass equivalents of all claim elements.

Entry of this §1.116 Amendment is proper. Since the Amendments above narrow the issues for appeal and since such features and their distinctions over the prior art of record were discussed earlier, such amendments do not raise a new issue requiring a further search and/or consideration by the Examiner. As such, entry of this Amendment is believed proper and Applicants earnestly solicit entry. No new matter has been added.

Applicants gratefully acknowledge that claims 1-8 and 13-17 are allowed. However, Applicants respectfully submit that all of the claims are allowable.

Applicants gratefully acknowledge that claims 9-12 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome the rejection under 35 U.S.C. § 112, second paragraph. However, Applicant respectfully submits that all of the claims are allowable.

Claims 18-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by the Nishimura reference.

This rejection is respectfully traversed in the following discussion.

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I. THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as defined, for example, by independent claim 18, is directed to a differential limiting controller for a four wheel drive vehicle having a clutch that variably transmits a driving force to a front drive shaft and to a rear drive shaft. The controller includes an automatic clutch controller that automatically controls an engagement force of the clutch, a manual clutch controller for manually controlling the engagement force of the clutch, and a controller selector that selects one of the automatic clutch controller and the manual clutch controller.

Conventional four wheel drive vehicles having a center clutch differential control have difficulty controlling vehicle driving performance while tire and/or road surface conditions and driver skill levels vary.

One conventional four wheel drive vehicle attempts to address this problem by providing a manual clutch controller that allows a driver to manually control the engagement of a center differential clutch.

However, it is very difficult for a driver to optimally adjust the differential limiting torque using a manual clutch controller. For example, if a driver operates the manual clutch controller in a released condition, in an extreme case, the vehicle may spin in a low friction coefficient road surface condition. Further, if a driver operates the manual clutch controller in an engaged condition for a lengthy period of time and/or while the vehicle is operated at a higher speed, torque may be circulated within the powertrain of the vehicle, which may, for example, adversely affect fuel economy.

In stark contrast, an exemplary embodiment of the present invention provides a

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controller selector that selects one of an automatic clutch controller and a manual clutch controller. In this manner, the present invention allows a driver to manually control engagement of the clutch, but also is able to select the automatic clutch controller to avoid the manual controller from incorrectly engaging the clutch (page 1, line 12 - page 2, line 23; page 3, lines 1 - 22; and page 36, line 11 - page 37, line 8).

II. THE 35 U.S.C. § 112, SECOND PARAGRAPH REJECTION

The Examiner alleges that claims 9, 11-12, and 19-20 are indefinite. While Applicants submit that such would be clear to one of ordinary skill in the art to allow them to know the metes and bounds of the invention, taking the present Application as a whole, to speed prosecution claims 9, 11-12, and 19-20 have been amended in accordance with Examiner Lerner's very helpful suggestions.

In view of the foregoing, the Examiner is respectfully requested to withdraw this rejection.

III. THE PRIOR ART REJECTION

Regarding the rejection of claims 18-20, the Examiner alleges that the Nishimura reference teaches the claimed invention. Applicants submit, however, that there are elements of the claimed invention which are neither taught nor suggested by the Nishimura reference.

The Nishimura reference discloses a clutch that is a device for transmitting a torque from an engine to a transmission. The Nishimura reference does not relate to a center differential of a 4WD vehicle.

Therefore, the Nishimura reference does not disclose "a differential limiting

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controller” nor “a clutch that variably transmits a driving force to a front drive shaft and a rear drive shaft.”

Even if a crank shaft in the engine that is disclosed by the Nishimura reference is interpreted by the Examiner to correspond to “a front drive shaft” and an input shaft of the transmission that is disclosed by the Nishimura reference is interpreted by the Examiner as corresponding to “a rear drive shaft,” the clutch that is disclosed by the Nishimura reference only transmits the torque from the “front shaft” to the “rear drive shaft.” Therefore, the clutch that is disclosed by the Nishimura reference does not transmit a driving force to both front and rear drive shafts as recited by independent claim 18.

Further, the Nishimura reference clearly does not teach or suggest a controller selector that selects one of an automatic clutch controller and a manual clutch controller. As explained above, this feature is important for allowing a driver to manually control engagement of the clutch, but also is able to select the automatic clutch controller to avoid the manual controller from incorrectly engaging the clutch.

Rather, in stark contrast, the Nishimura reference discloses a transmission control unit 306, which is capable of automatically controlling the engagement of a clutch 404 and a clutch pedal, which is capable of manually controlling the engagement of the clutch 404. (col. 3, lines 51-67).

The Nishimura reference does not teach or suggest any controller selector at all, let alone a controller selector that selects one of an automatic clutch controller and a manual clutch controller as recited by independent claim 18.

Indeed, the vehicle transmission that is disclosed by the Nishimura reference suffers from the exact same problem that is solved by the present invention.

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An exemplary embodiment of the present invention is directed to preventing the control of a clutch by a manual controller under certain operating conditions. For example, improper engagement of a clutch, such as, constant engagement and/or partial engagement, can lead to significantly increase wear of the clutch, reduced mileage, and adverse handling characteristics of the vehicle.

The present invention provides the ability to select one of the automatic clutch controller and the manual automatic controller using a controller selector. In this manner, improper engagement of the clutch with the manual controller may be avoided.

In stark contrast, the Nishimura reference does not teach or suggest any controller selector at all, let alone a controller selector that selects one of an automatic clutch controller and a manual clutch controller as recited by independent claim 18.

Therefore, the Nishimura reference is not capable of preventing improper engagement of the clutch through improper use of the manual clutch controller. Rather, the manual clutch controller (clutch pedal 310) is always capable of controlling the engagement force of the clutch 404.

Therefore, the Nishimura reference does not teach or suggest each and every element of the claimed invention and the Examiner is respectfully requested to withdraw this rejection of claims 18-20.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-20, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully

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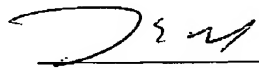
requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

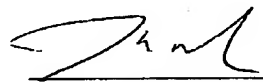
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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment by facsimile with the United States Patent and Trademark Office to Examiner Avraham H. Lerner, Group Art Unit 3611 at fax number (703) 872-9306 this 29th day of March, 2005.


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